

Notice of Allowability

Application No.

10/069,363

Applicant(s)

GILLHAM ET AL.

Examiner

Faye Polyzos

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 28 June 2005.
2. ☒ The allowed claim(s) is/are 21-41.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 6/28/05
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE

Comment on Submissions

1. This communication is responsive to submissions 28 August 2005.

Allowable Subject Matter

2. Claims 21-41 are allowed.
3. The following is an examiner's statement of reasons for allowance:

Regarding independent claim 21, the prior art does not disclose or fairly suggest a bolometer comprising a support element comprising of substantially a single layer of support material and carrying on its underside a resistive material, wherein the support element is arranged to absorb incident radiation.

The examiner notes that while it is known in the art for a bolometer (140) to comprise a support element (156)(158) forming a micro-bridge structure on a substrate (142), the support element comprising a stack (144) of support material and an amorphous silicon resistive layer (150) could be heavily doped adjacent to the titanium nitride layers (148)(152) to lower specific contact resistance and contact noise (see for example – Hornbeck et al -- *US 5,021,663* -- Generally Fig. 4a and col. 3, lines 37-60 and col. 11, lines 19-43), the prior art does not suggest of a bolometer, arranged to absorb incident radiation, comprising a single layer support element and carrying on its underside a resistive sensing material.

Regarding independent claim 29, the prior art does not disclose or fairly suggest a method of fabricating a bolometer including a micro-bridge structure onto a substrate

having the steps of removing the sacrificial material leaving support material with the sensing material on its lower surface, free standing above the substrate.

The examiner notes that while it is known in the art for a method of fabricating a bolometer including a micro-bridge structure onto a substrate having the steps of providing a sacrificial material on a surface region of the substrate; patternwise etching the sacrificial material; providing a support material on a surface region of the sensing the sensing material (see for example – *Laou et al -- US 6,198,098 B1* – col. 5, lines 61-67 and col. 6, lines 17-36), the prior art does not suggest of a method after removing sacrificial material, leaving the sensing material layer on the lower surface of the support material.

Regarding independent claim 39, the prior art does not disclose or fairly suggest a bolometer comprising a micro-bridge structure providing a support element, comprising substantially a single layer of material, arranged to absorb incident radiation wherein on the underside of the support element there is provided a resistive sensing material arranged to change resistance in response to incident radiation.

The examiner notes that while it is known in the art for a bolometer (140) to comprise a support element (156)(158) forming a micro-bridge structure on a substrate (142), the support element comprising a stack (144) of support material and an amorphous silicon resistive layer (150) could be heavily doped adjacent to the titanium nitride layers (148)(152) to lower specific contact resistance and contact noise (see for example – *Hornbeck et al -- US 5,021,663 -- Generally Fig. 4a and col. 3, lines 37-60 and col. 11, lines 19-43*), the prior art does not suggest of a bolometer, arranged to

absorb incident radiation wherein a support element, adjacent to the substrate, comprising a single layer of material.

Regarding independent claims 40 and 41, the prior art does not disclose or fairly suggest a resistive bolometer apparatus or method comprising at least one continuous track of sensing material on the underside of the support material.

The examiner notes that while it is known in the art for a bolometer (140) to comprise a support element (156)(158) forming a micro-bridge structure on a substrate (142), the support element comprising a stack (144) of support material and an amorphous silicon resistive layer (150) could be heavily doped adjacent to the titanium nitride layers (148)(152) to lower specific contact resistance and contact noise (see for example – Hornbeck et al -- *US 5,021,663* -- Generally Fig. 4a and col. 3, lines 37-60 and col. 11, lines 19-43), the prior art does not suggest of a bolometer comprising sensing material on the underside of the support material.

The remaining claims 22-28 and 30-38 are allowable based on their dependency.

Conclusion


4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Faye Polyzos whose telephone number is 571-272-2447. The examiner can normally be reached on Monday thru Friday from 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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5. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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